

## 13

expired, without the terminal device having started to transmit the next packet (TIMEOUT).

7. A method in accordance with claim 6, characterized in that said predetermined time limit is the longer the more seldom the transmission power has been corrected earlier during the same packet switched radio connection.

8. A method in accordance with claim 1, characterized in that in said second state, the value of the transmission power calculated for the next packet at a certain moment follows the formula

$$S(t)=Si(ti)+(Sc(tc)-Si(ti))*e^{-\alpha(t-tc)}$$

wherein Si(ti) is the default value of the transmission power calculated on the basis of the measuring of the signals transmitted regularly by the base station, ti is an averaged time used for calculating Si(ti), Sc(tc) is the transmission power calculated on the basis of the feedback transmitted by the base station, tc is an averaged time used for calculating the Sc(tc) and  $\alpha$  is a positive parameter.

9. A method in accordance with claim 1, characterized in that when the terminal device has determined the value of a certain new transmission power, it changes its transmission power from the previous value of the transmission power towards said new value of the transmission power not more than by a certain marginal factor.

10. A method in accordance with claim 9, characterized in that said marginal factor is determined based on the size of the packets to be transmitted in the data transfer link.

11. A method in accordance with claim 10, characterized in that said marginal factor is the bigger the longer the packets to be transmitted in the data transfer link are.

12. A method in accordance with claim 1, characterized in that if said terminal device does not get in said second state any acknowledgement at all to a certain packet that it has transmitted, it increases its transmission power.

13. A method for controlling a transmission power in a base station of a cellular radio system, a radio connection of which at least with one terminal device comprises an alternative first state (10) and a second state (11), in the first state of which the base station transmits regularly control signals and in the second state of which the base station additionally transmits data as packets to a certain terminal device, characterized in that in said first state the default value of the transmission power in said base station is the same as the maximum transmission power of the base station and in said second state the control of the transmission power in said base station is based as well on the feedback of the quality of a data transfer link (35, 36, 37, 39) said feedback being transmitted by the terminal device, as on the time passed from the reception of a previous acknowledgement message by the base station from said terminal device.

14. A method in accordance with claim 13, characterized in that in said second state the meaning of a certain feedback transmitted by said terminal device and indicating the quality of the data transfer link is the smaller the longer the time is that has passed from the reception of the feedback in question by said base station.

15. A method in accordance with claim 13, characterized in that the base station that is in said second state moves to the first state when a certain predefined time limit from reception of the feedback on the latest transmitted packet has expired without the base station having started to transmit the next packet (TIMEOUT).

16. A method in accordance with claim 15, characterized in that said predefined time limit is the longer the more seldom the transmission power has been corrected earlier during the same packet switched radio link.

## 14

17. A method in accordance with claim 13, characterized in that when the base station has determined the value of the certain new transmission power, it changes its transmission power from the previous value of the transmission power towards said new value of the transmission power not more than by a certain marginal factor.

18. A method in accordance with claim 17, characterized in that said marginal factor is determined based on the size of the packets to be transmitted in the data transfer link.

19. A method in accordance with claim 18, characterized in that said marginal factor is the bigger the longer the packets to be transmitted in the data transfer link are.

20. A method in accordance with any of the foregoing claims, characterized in that if said base station does not get in said second state any acknowledgement at all to a certain packet transmitted by it, it increases its transmission power.

21. A method for controlling transmission power in a terminal device of a packet switched radio communication system comprising steps of:

- a) establishing an initial state radio connection with a certain packet switched radio communication base, wherein a default value of the transmission power of the terminal device is based on a measuring of signals regularly transmitted by the base station; and
- b) switching to an alternative packet reception state radio connection with a certain packet switched radio communication base station, wherein the terminal device receives additional feedback acknowledgment data from the base station, wherein the transmission power of the terminal device is based both on feedback acknowledgment data and on a measuring of signals regularly transmitted by the base station, wherein the feedback acknowledgment data contains information on the quality and age of packets received and transmitted by the base station.

22. A method in accordance with claim 1, wherein the second state, the value of the transmission power of a terminal device of a packet switched cellular radio base station calculated at a certain moment follows the formula

$$S(t)=Si(ti)+(Sc(tc)-Si(ti))*e^{-(t-tc)}$$

wherein Si(ti) is the default value of the transmission power in the terminal device calculated on the basis of a measuring of the signals regularly transmitted by the base station, ti is an averaged time used for calculating Si(ti), Sc(tc) is the transmission power calculated on the basis of a packetized feedback signal transmitted by the packet switched cellular radio base station, tc is an averaged time derived from age data associated with each packetized feedback signal and used for calculating Sc(tc) and (t-tc), and is a positive parameter.

23. A method in accordance with claim 13, wherein said alternative first state (10) and said alternative second state (11), the value of transmission power of a packet switched cellular radio base station calculated for the next packet to a certain terminal device at a certain moment, characterized in that said first state of which the packet switched cellular radio base station regularly transmits control signals and in said second state of which the packet switched cellular radio base station additionally transmits feedback data as packets to a certain terminal device, characterized in that in said first state the default value of the transmission power in said packet switched cellular radio base station is the same as the maximum transmission power of the packet switched cellular radio base station and in said second state the control of the transmission power in said packet switched cellular